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Amended Claims

Support see "amended 2"

1. An apparatus for laser vision correction comprising means for controlling the apparatus to deliver a myopia correcting nominal laser ablation in an optical zone identified for the myopia correcting nominal ablation of an exposed corneal surface of an eye,
characterized in that:

the apparatus is further controlled to deliver a laser ablation in a region outside of the identified optical zone and separated therefrom by a minimum distance so as to create a central flattening of the corneal surface *via* a controlled biodynamic response to the exposed corneal surface outside of the identified optical zone.

2. The apparatus of claim 1, wherein the laser ablation in a region outside of the identified optical zone is at least part of an ablation ring.

3. The apparatus of claim 2, wherein the at least part of an ablation ring is either circular or acircular in shape.

4. The apparatus of claim 2, wherein the at least part of an ablation ring has an inner boundary adjacent an outer boundary of the identified optical zone.

5. The apparatus of claim 4, wherein the inner boundary of the at least part of the ablation ring begins at a distance, d, from the outer boundary of the identified optical zone, where $200\mu m \leq d \leq 600\mu m$.

6. The apparatus of claim 2, wherein the at least part of the ablation ring has a depth, t, where $10\mu m \leq t \leq 70\mu m$, and a width, w.

7. The apparatus of claim 6, wherein t and w are variable as a function of the biodynamic ablation location on the cornea.

8. The apparatus of claim 6, wherein w is a function of a laser beam diameter on the cornea.

9. The apparatus of claim 6, wherein w has a nominal value of about 1mm.

10. The apparatus of claim 1, wherein the laser ablation in a region outside of the identified optical zone lies within at least part of a transition zone of the nominal ablation.

11. The apparatus of claim 1, wherein the means for providing the controlled biodynamic response creates a tissue ablation volume for a desired refractive correction that is less than a corresponding tissue ablation volume for the desired refractive correction in the absence of the controlled biodynamic response.

12. The apparatus of claim 11, wherein the lessened tissue ablation volume has a smaller ablation depth over the optical zone than a corresponding ablation depth over the optical zone in the absence of the controlled biodynamic response.

13. The apparatus of claim 1, wherein the means for providing the controlled biodynamic response empirically determines the controlled biodynamic response from a statistically significant population.

14. The apparatus of claim 1, wherein the means for providing the controlled biodynamic response delivers a plurality of photoablative light pulses onto the corneal surface, all of which have only a 1mm diameter.

15. The apparatus of claim 14, wherein the plurality of photoablative light pulses have a direct aperture transmission portion and a diffractive aperture transmission portion so as to produce a soft-spot beam intensity profile.

16. The apparatus of any of claims 1 to 15, further characterized by:

a medium readable by the apparatus including an executable instruction for directing the apparatus to deliver the myopia correcting nominal ablation in the identified optical zone of the corneal surface, and further including an executable instruction for directing the apparatus to deliver a myopia correction enhancing biodynamic ablation in the corneal surface outside of the identified optical zone.